Temperature sensor (NTC)
NTC elements

AEC-Q200

NTCD series

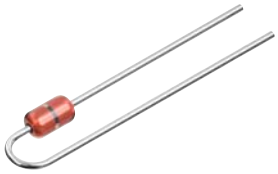
FEATURES

- Glass-encapsulated axial lead structure makes strong resistance in high humidity and high temperature environment, and our products achieve high reliability.
- The deviation of Resistance-Temperature characteristics is small.
- By applying semiconductor mass production technology, our thermistor achieves miniaturization, excellent mass productivity, and high cost performance.
- The option of lead wire bending is available to easily fix on mounting condition.
- Epoxy coating is possible to improve weather resistance and to relieve stress on glass parts.

APPLICATION

- Temperature detection of home appliances (refrigerators, air conditioners, etc.)
- Temperature detection of automobiles (intake/exhaust temperature, mission oil, etc.)
- Temperature detection of industrial equipment (motors, etc.)

PRODUCT LINEUP

NTCDS series Standard lead	NTCDA series U-bend product
	
NTCDE series C-bend product	**NTCDZ series U-bend + coating product**
	

Temperature sensor (NTC)
NTC elements

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PART NUMBER CONSTRUCTION

NTC	D	○	□□□	○	□□□	○	○	○	○	○	□□□
Series name	Structural classification	Lead wire processing	B constant (K)	B constant tolerance (%)	Nominal resistance (Ω)	Resistance tolerance (%)	Standard temperature (°C)	Dimensions	Lead wire surface specification	Package clssification	Internal code No.

Series name

NTC thermistor

B constant tolerance (%)

F	±1
G	±2
H	±3
J	±5
K	±10

Nominal resistance (Ω)

2 significant digits + power of 10

Resistance tolerance (%)

F	±1
G	±2
H	±3
J	±5
K	±10

Standard temperature (°C)

A	–20
B	0
C	25
D	100

Dimensions

3	3x1.8ø
4	4x2.0ø

Lead wire surface specification

N	Nickel
S	Tin

Package clssification

B	Bulk
T	Taping

Structural classification

D	Glass-encapsulated axial lead NTC thermistor

B constant

3A	3000 to 3050	3L	3501 to 3550	4A	4000 to 4050	4L	4501 to 4550
3B	3051 to 3100	3M	3551 to 3600	4B	4051 to 4100	4M	4551 to 4600
3C	3101 to 3150	3N	3601 to 3650	4C	4101 to 4150	4N	4601 to 4650
3D	3151 to 3200	3P	3651 to 3700	4D	4151 to 4200	4P	4651 to 4700
3E	3201 to 3250	3Q	3701 to 3750	4E	4201 to 4250	4Q	4701 to 4750
3F	3251 to 3300	3R	3751 to 3800	4F	4251 to 4300	4R	4751 to 4800
3G	3301 to 3350	3S	3801 to 3850	4G	4301 to 4350	4S	4801 to 4850
3H	3351 to 3400	3T	3851 to 3900	4H	4351 to 4400	4T	4851 to 4900
3J	3401 to 3450	3U	3901 to 3950	4J	4401 to 4450	4U	4901 to 4950
3K	3451 to 3500	3V	3951 to 3999	4K	4451 to 4500	4V	4951 to 4999

Lead wire processing

S	Standard lead
A	U-bend
E	C-bend
Z	U-bend + coating

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CHARACTERISTICS

	Standard lead, bending lead		Coating	
Assembly classification code	S、A、E		Z	
Dimensional code	3	4	3	4
Shape of the sensor section	3.0×ø1.8mm	4.0×ø2.0mm	ø2.3mm max.	ø2.7mm max.
Heat dissipation constant (in still air)	1mW/°C	2mW/°C	2mW/°C	3mW/°C
Thermal time constant (in still air)	10s max.	20s max.	20s max.	30s max.
Insulation resistance (between lead and glass)	50MΩ min. [DC.500V]		50MΩ min. [DC.500V]	
Operating temperature range	–40 to 250°C		–40 to 160°C	

CHARACTERISTICS SPECIFICATION TABLE

Shapes Code	Part No.					Nominal resistance	B constant	Reference value	
	Standard lead	Lead wire processing			Taping			0°C	100°C
	Axial lead	Axial lead U-bend	Axial lead C-bend	Axial lead U-bend + coating	Axial lead Taping 53mm wide	(25°C)			
3	NTCDS3LG202HC3NB	NTCDA3LG202HC3NB	NTCDE3LG202HC3NB	NTCDZ3LG202HC3NB	NTCDS3LG202HC3NT	2.000kΩ±3%	B25/85:3528K±2%	5.679kΩ	0.1823kΩ
	NTCDS3HG222HC3NB	NTCDA3HG222HC3NB	NTCDE3HG222HC3NB	NTCDZ3HG222HC3NB	NTCDS3HG222HC3NT	2.186kΩ±3%	B25/85:3392K±2%	6.000kΩ	0.2208kΩ
	NTCDS3KG492HC3NB	NTCDA3KG492HC3NB	NTCDE3KG492HC3NB	NTCDZ3KG492HC3NB	NTCDS3KG492HC3NT	4.961kΩ±3%	B25/85:3480K±2%	13..89kΩ	0.4700kΩ
	NTCDS4AG502HC3NB	NTCDA4AG502HC3NB	NTCDE4AG502HC3NB	NTCDZ4AG502HC3NB	NTCDS4AG502HC3NT	5.000kΩ±3%	B25/85:4000K±2%	17.34kΩ	0.3406kΩ
	NTCDS3UG942HC3NB	NTCDA3UG942HC3NB	NTCDE3UG942HC3NB	NTCDZ3UG942HC3NB	NTCDS3UG942HC3NT	9.395kΩ±3%	B25/85:3940K±2%	31.39kΩ	0.6625kΩ
	NTCDS3HG103HC3NB	NTCDA3HG103HC3NB	NTCDE3HG103HC3NB	NTCDZ3HG103HC3NB	NTCDS3HG103HC3NT	10.00kΩ±3%	B25/85:3400K±2%	27.18kΩ	0.9982kΩ
	NTCDS3KG203HC3NB	NTCDA3KG203HC3NB	NTCDE3KG203HC3NB	NTCDZ3KG203HC3NB	NTCDS3KG203HC3NT	20.00kΩ±3%	B25/85:3500K±2%	54.65kΩ	1.861kΩ
	NTCDS4AG303HC3NB	NTCDA4AG303HC3NB	NTCDE4AG303HC3NB	NTCDZ4AG303HC3NB	NTCDS4AG303HC3NT	30.00kΩ±3%	B25/85:4000K±2%	98.69kΩ	2.012kΩ
	NTCDS4AG493HC3NB	NTCDA4AG493HC3NB	NTCDE4AG493HC3NB	NTCDZ4AG493HC3NB	NTCDS4AG493HC3NT	49.20kΩ±3%	B25/85:4000K±2%	161.8kΩ	3.300kΩ
	NTCDS4AG503HC3NB	NTCDA4AG503HC3NB	NTCDE4AG503HC3NB	NTCDZ4AG503HC3NB	NTCDS4AG503HC3NT	50.00kΩ±3%	B25/85:4000K±2%	164.5kΩ	3.354kΩ
	NTCDS3SG104HC3NB	NTCDA3SG104HC3NB	NTCDE3SG104HC3NB	NTCDZ3SG104HC3NB	NTCDS3SG104HC3NT	100.0kΩ±3%	B25/85:3850K±2%	311.5kΩ	7.378kΩ
4	NTCDS3LG202HC4NB	NTCDA3LG202HC4NB	NTCDE3LG202HC4NB	NTCDZ3LG202HC4NB	NTCDS3LG202HC4NT	2.000kΩ±3%	B25/85:3528K±2%	5.679kΩ	0.1823kΩ
	NTCDS3HG222HC4NB	NTCDA3HG222HC4NB	NTCDE3HG222HC4NB	NTCDZ3HG222HC4NB	NTCDS3HG222HC4NT	2.186kΩ±3%	B25/85:3392K±2%	6.000kΩ	0.2208kΩ
	NTCDS3KG492HC4NB	NTCDA3KG492HC4NB	NTCDE3KG492HC4NB	NTCDZ3KG492HC4NB	NTCDS3KG492HC4NT	4.961kΩ±3%	B25/85:3480K±2%	13..89kΩ	0.4700kΩ
	NTCDS4AG502HC4NB	NTCDA4AG502HC4NB	NTCDE4AG502HC4NB	NTCDZ4AG502HC4NB	NTCDS4AG502HC4NT	5.000kΩ±3%	B25/85:4000K±2%	17.34kΩ	0.3406kΩ
	NTCDS3UG942HC4NB	NTCDA3UG942HC4NB	NTCDE3UG942HC4NB	NTCDZ3UG942HC4NB	NTCDS3UG942HC4NT	9.395kΩ±3%	B25/85:3940K±2%	31.39kΩ	0.6625kΩ
	NTCDS3HG103HC4NB	NTCDA3HG103HC4NB	NTCDE3HG103HC4NB	NTCDZ3HG103HC4NB	NTCDS3HG103HC4NT	10.00kΩ±3%	B25/85:3400K±2%	27.18kΩ	0.9982kΩ
	NTCDS3KG203HC4NB	NTCDA3KG203HC4NB	NTCDE3KG203HC4NB	NTCDZ3KG203HC4NB	NTCDS3KG203HC4NT	20.00kΩ±3%	B25/85:3500K±2%	54.65kΩ	1.861kΩ
	NTCDS4AG303HC4NB	NTCDA4AG303HC4NB	NTCDE4AG303HC4NB	NTCDZ4AG303HC4NB	NTCDS4AG303HC4NT	30.00kΩ±3%	B25/85:4000K±2%	98.69kΩ	2.012kΩ
	NTCDS4AG493HC4NB	NTCDA4AG493HC4NB	NTCDE4AG493HC4NB	NTCDZ4AG493HC4NB	NTCDS4AG493HC4NT	49.20kΩ±3%	B25/85:4000K±2%	161.8kΩ	3.300kΩ
	NTCDS4AG503HC4NB	NTCDA4AG503HC4NB	NTCDE4AG503HC4NB	NTCDZ4AG503HC4NB	NTCDS4AG503HC4NT	50.00kΩ±3%	B25/85:4000K±2%	164.5kΩ	3.354kΩ
	NTCDS3SG104HC4NB	NTCDA3SG104HC4NB	NTCDE3SG104HC4NB	NTCDZ3SG104HC4NB	NTCDS3SG104HC4NT	100.0kΩ±3%	B25/85:3850K±2%	311.5kΩ	7.378kΩ

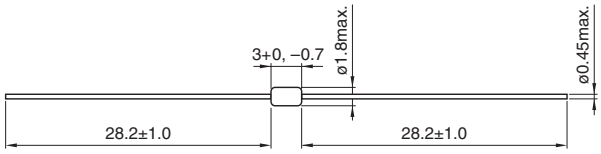
Temperature sensor (NTC)
NTC elements

NTCD series

SHAPE & DIMENSIONS

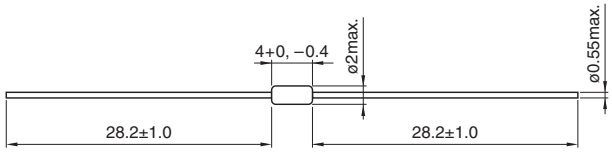
Standard lead / NTCDS series

○Dimensional code 3



Dimensions in mm

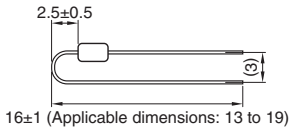
○Dimensional code 4



Dimensions in mm

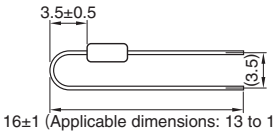
U-bend product / NTCDE series

○Dimensional code 3



Dimensions in mm

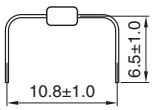
○Dimensional code 4



Dimensions in mm

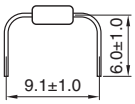
C-bend product/NTCDE series

○Dimensional code 3



Dimensions in mm

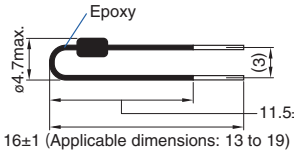
○Dimensional code 4



Dimensions in mm

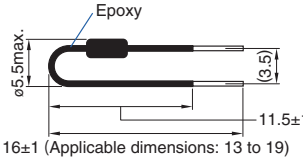
U-bend + coating product / NTCDZ series

○Dimensional code 3



Dimensions in mm

○Dimensional code 4



Dimensions in mm

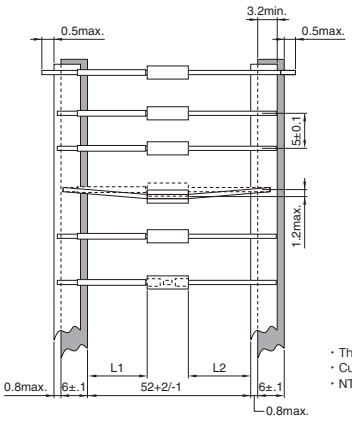
PACKAGING STYLE

□Bulk package

Package classification code: B
Minimum number of packages: 200 pieces

□Taping packaging

Package classification code: T
Minimum number of packages: 2000 pieces



・The difference between L1 and L2 is set to less than 1 mm.
・Cumulative pitch tolerance is ±2 at 20 pitches.
・NTCDA, NTCDE, NTCDZ series cannot perform taping packing.

Dimensions in mm

Temperature sensor (NTC)
NTC elements

NTCD series

RT CHARACTERISTICS

Temperature (°C)	NTCD□ 3LG202 HC□NB	NTCD□ 3HG222 HC□NB	NTCD□ 3KG492 HC□NB	NTCD□ 4AG502 HC□NB	NTCD□ 3UG942 HC□NB	NTCD□ 3HG103 HC□NB	NTCD□ 3KG203 HC□NB	NTCD□ 4AG303 HC□NB	NTCD□ 4AG493 HC□NB	NTCD□ 4AG503 HC□NB	NTCD□ 3SG104 HC□NB
–40	44.89	42.92	104.7	212.3	346.8	193.1	355.8	1009	1655	1682	2874
–35	33.71	32.68	78.84	148.9	247.3	146.7	275.9	728.2	1194	1214	2107
–30	25.55	25.09	59.96	105.9	178.5	112.5	215.3	531.9	872.3	886.5	1561
–25	19.53	19.42	46.03	76.16	130.3	87.05	169	392.7	644.0	654.5	1168
–20	15.05	15.14	35.65	55.46	96.13	67.93	133.5	292.8	480.2	488.0	881.4
–15	11.69	11.89	27.83	40.83	71.65	53.43	105.9	220.3	361.3	367.2	671.3
–10	9.154	9.409	21.90	30.38	53.92	42.35	84.54	167.2	274.2	278.7	515.6
–5	7.219	7.495	17.37	22.84	40.96	33.81	67.8	128.0	209.9	213.3	399.2
0	5.734	6.010	13.89	17.34	31.39	27.18	54.65	98.69	161.8	164.5	311.5
5	4.586	4.850	11.15	13.29	24.27	21.99	44.27	76.69	125.8	127.8	244.9
10	3.692	3.939	9.026	10.27	18.92	17.90	36.04	60.03	98.44	100.0	193.8
15	2.991	3.218	7.351	8.016	14.87	14.66	29.47	47.32	77.59	78.86	154.5
20	2.439	2.645	6.022	6.302	11.77	12.08	24.22	37.55	61.58	62.59	123.9
25	2.000	2.186	4.961	5.000	9.395	10.00	20.00	30.00	49.20	50.00	100.0
30	1.650	1.817	4.110	3.997	7.551	8.324	16.59	24.12	39.56	40.20	81.2
35	1.368	1.518	3.422	3.219	6.112	6.964	13.82	19.52	32.00	32.53	66.31
40	1.141	1.275	2.864	2.612	4.980	5.854	11.57	15.88	26.05	26.47	54.45
45	0.9566	1.076	2.409	2.134	4.085	4.944	9.724	13.01	21.33	21.68	44.95
50	0.8059	0.9122	2.035	1.756	3.371	4.194	8.209	10.71	17.56	17.85	37.30
55	0.6822	0.7772	1.727	1.453	2.799	3.572	6.958	8.865	14.54	14.77	31.10
60	0.5802	0.6652	1.472	1.210	2.337	3.056	5.922	7.378	12.10	12.30	26.06
65	0.4957	0.5717	1.260	1.015	1.963	2.624	5.06	6.172	10.12	10.29	21.94
70	0.4254	0.4935	1.082	0.8551	1.657	2.262	4.34	5.188	8.508	8.647	18.55
75	0.3665	0.4277	0.9336	0.7246	1.406	1.957	3.736	4.382	7.187	7.304	15.75
80	0.3171	0.3722	0.8083	0.6172	1.199	1.699	3.228	3.719	6.099	6.198	13.43
85	0.2754	0.3250	0.7023	0.5282	1.027	1.480	2.799	3.170	5.198	5.283	11.50
90	0.2401	0.2849	0.6123	0.4543	0.8834	1.294	2.435	2.713	4.449	4.522	9.880
95	0.2101	0.2506	0.5356	0.3925	0.7634	1.135	2.125	2.332	3.824	3.887	8.522
100	0.1845	0.2212	0.4700	0.3406	0.6625	0.9982	1.861	2.012	3.300	3.354	7.378
105	0.1625	0.1958	0.4138	0.2967	0.5771	0.8808	1.634	1.743	2.858	2.905	6.409
110	0.1436	0.1739	0.3653	0.2595	0.5046	0.7795	1.439	1.515	2.485	2.526	5.587
115	0.1273	0.1549	0.3235	0.2278	0.4429	0.6918	1.272	1.322	2.168	2.204	4.886
120	0.1132	0.1384	0.2873	0.2007	0.3900	0.6157	1.126	1.157	1.898	1.929	4.286
125	0.1009	0.1240	0.2558	0.1774	0.3446	0.5494	1.001	1.017	1.667	1.694	3.772
130	0.09019	0.1113	0.2284	0.1575	0.3054	0.4916	0.891	0.8957	1.469	1.493	3.329
135	0.08083	0.1002	0.2045	0.1400	0.2715	0.4409	0.7954	0.7916	1.298	1.319	2.946
140	0.07261	0.09043	0.1835	0.1250	0.2421	0.3965	0.7118	0.7016	1.150	1.169	2.615
145	0.06539	0.08178	0.1651	0.1119	0.2164	0.3574	0.6385	0.6235	1.023	1.039	2.327
150	0.05901	0.07411	0.1488	0.1003	0.1940	0.3230	0.574	0.5557	0.9113	0.9262	2.077
155	0.05336	0.06729	0.1345	0.09027	0.1744	0.2925	0.5172	0.4965	0.8142	0.8275	1.857
160	0.04835	0.06121	0.1218	0.08141	0.1571	0.2655	0.467	0.4447	0.7293	0.7412	1.665
165	0.04389	0.05577	0.1106	0.07359	0.1419	0.2415	0.4225	0.3993	0.6548	0.6655	1.497
170	0.03991	0.05090	0.1005	0.06666	0.1284	0.2202	0.383	0.3594	0.5893	0.5989	1.348
175	0.03635	0.04652	0.09163	0.06052	0.1165	0.2012	0.3478	0.3241	0.5315	0.5402	1.217
180	0.03315	0.04258	0.08367	0.05506	0.1058	0.1842	0.3165	0.2930	0.4805	0.4883	1.101
185	0.03028	0.03902	0.07654	0.05018	0.09638	0.1690	0.2884	0.2654	0.4352	0.4423	0.9979
190	0.02770	0.03580	0.07016	0.04583	0.08793	0.1553	0.2634	0.2408	0.3949	0.4014	0.9063
195	0.02536	0.03288	0.06442	0.04192	0.08037	0.1430	0.2409	0.2190	0.3591	0.3650	0.8247
200	0.02325	0.03022	0.05925	0.03842	0.07359	0.1320	0.2206	0.1995	0.3271	0.3325	0.7518
205	0.02133	0.02780	0.05459	0.03526	0.0675	0.1220	0.2024	0.1821	0.2986	0.3034	0.6865
210	0.01958	0.02559	0.05038	0.03241	0.06200	0.1130	0.186	0.1664	0.2729	0.2774	0.6280
215	0.01800	0.02357	0.04657	0.02984	0.05705	0.1048	0.1711	0.1524	0.2499	0.2540	0.5754
220	0.01655	0.02171	0.04311	0.02751	0.05257	0.09744	0.1577	0.1398	0.2292	0.2329	0.5280
225	0.01522	0.02001	0.03997	0.02540	0.04851	0.09072	0.1455	0.1284	0.2105	0.2140	0.4852
230	0.01401	0.01845	0.03711	0.02349	0.04482	0.08461	0.1344	0.1181	0.1937	0.1968	0.4466
235	0.01290	0.01701	0.03451	0.02173	0.04147	0.07904	0.1244	0.1088	0.1784	0.1813	0.4115
240	0.01188	0.01569	0.03214	0.02014	0.03842	0.07396	0.1152	0.1004	0.1646	0.1673	0.3798
245	0.01094	0.01446	0.02997	0.01869	0.03564	0.06932	0.1068	0.09272	0.1520	0.1545	0.3509
250	0.01007	0.01333	0.02798	0.01736	0.03310	0.06508	0.09917	0.08576	0.1406	0.1429	0.3246

Detailed RT tables (in 2°C increments) can be searched on the web page. Or contact us.

Temperature sensor (NTC)
NTC elements

NTCD series

REMINDER FOR USING

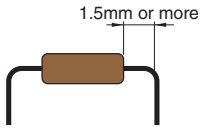
Be sure to request specification sheet before using.

SAFETY WARNING

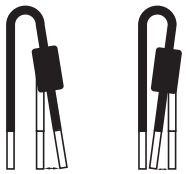
Pay careful attention to all warnings and operate only in accordance with safety specifications.

⚠ CAUTION

- Ensure to use thermistors under proper operating and mounting condition and only as specified in a product catalogue or final specification.
- Use thermistors only within the specified operating temperature range.
- Use thermistors only within the specified power range.
- The specified dissipation factor of the thermistor must not be exceeded. Exceeding this limit may cause fire through temperature increase with the resistance change of the NTC thermistor.
- Alert consumers that the thermistor in the application must not be touched by bare hands directly.
- When bending or cutting of lead wire, fix wire on the thermistor's head side.
  Be sure to keep distance at least 1.5mm from edge of glass when bending thermistors. Avoid to apply more than 20N. (Lead wire processing option code : S,A,E)



- Solder thermistors within following condition: Temperature of soldering iron :350 degree C max. (Soldering iron tip shape : ø3mm max.), Power : 20W max., keep more than 3mm distance from glass edge. (Lead wire processing option code : S,A,E)
- There is a possibility of cracking at the epoxy coating, so the displacement of the lead pitch should be within 3mm and the compressive strength to the epoxy should be within 17.5N. (Tip shape R 1.5 mm) (Lead wire processing option code :Z)



- The thermistor should be stored in original packaging under the following environment : Temperature: –10°C to +40°C
  Relative humidity: less than 75%
  Avoid rapid temperature change, direct sunshine, corrosive gas, dust, mechanical stress or pressure.
- When thermistors are sealed, sealing material and volume, hardening condition and adhesive property should be carefully considered and thermistor's reliability should be confirmed.
- Contacts on lead wire surface should be clean without any stain and rust to avoid contact failure.
- The material contacted by the thermistor must be carefully selected to avoid electric potential difference between the thermistor and metal part which may cause metal corrosion.
- Avoid to apply more than 8KV Electro-Static Discharge.
- Avoid to use in 85% relative humidity for long time. (Exclude countermeasure product)
- Avoid to use in following environment. (Exclude countermeasure product)
  - Corrosive gas (Cl_2, NH_3, SOx, NOx,etc)
  - High conductive environment (Electrolyte, water, salt water, etc.)
- Please take consideration an appropriate fail-safe function in customer application which requires a very high level of operational safety and reliability or could endanger society or human life.
  Please contact us before using the NTC thermistor assembled for the following application if those malfunction of failure might have serious damage to human life, health or one's property and severe influence on society. Application : cars, aerospace/aviation equipment, medical equipment, nuclear power plant equipment
  Please contact us also in case of the usage of the thermistor beyond the condition described